used as a means to lock-in clients into a particular backbone provider. MCI and WorldCom, as the largest Internet Backbone Provider, will own a substantial IP block allocations which will give them considerable market power in pricing its Internet Backbone services.

WorldCom and MCI dismiss Bell Atlantic's claims that this problem affects 90% of ISP's or USIPA's assertion that "vast majority" of all ISPs borrow their IP addresses from their backbone provider. Since WorldCom and MCI do not recognize a distinction between Internet Backbone Providers and Internet Service Providers, they treat retail ISPs who contract for upstream services and Internet backbone provision as dedicated access customers. They do, however, recognize that changing ISPs may be somewhat more involved for smaller dedicated access customers that are provided with IP addresses by their ISP. But according to MCI and WorldCom, many of these customers are now using the Dynamic Host Configuration Protocol (DHCP) and other means which eliminate the need to configure IP addresses in individual computers. Consequently, the potential for lock-in due to high switching costs affects only a small subgroup of dedicated access customers that may not yet have adopted, but could readily adopt, measures that would facilitate changing IP addresses. They claim that customers who are directly connected to an ISP and do not have portable IP addresses have tools available to facilitate IP address changes. The ability to lock-in customers because of the costs associated with changing IP addresses is a non-issue, according to WorldCom and MCI (January 26, 1998).

This dispute might be easily resolved by investigating whether most ISPs use Dynamic Host Configuration Protocol and if not how costly would it be for them to install it or a similar product. Again, this issue could be resolved with the assistance of engineers who are expert in IP address configuration and the associated costs in changing IP addresses. It cannot, however, simply be ignored or dismissed.

Does WorldCom's Ownership of Five NAPs Create Market Leverage? Bell Atlantic (1998) argues that because WorldCom owns five NAPs, including the two dominant NAPs, MAE East and MAE West, these bottleneck points will give WorldCom MCI leverage over other

Internet Backbone Providers. Bell Atlantic reports that WorldCom's MAE East in Washington, D.C. handles more than 60 percent of all worldwide traffic, an estimated 85 percent of all intra-European traffic, and roughly 40 percent of U.S. Internet traffic. As owner of five NAPs, WorldCom has the ability to influence the terms by which traffic is shared, not only between its network and other networks, but among other networks as well. A backbone provider or ISP cut off from a WorldCom NAP could be in dire straits since other NAPs are overwhelmed with traffic and congestion. Ownership of these facilities gives WorldCom enormous influence in the marketplace, according to Bell Atlantic. No other backbone has this sort of control; only one other backbone, Sprint, is in direct control of even a single NAP, the New York NAP located in New Jersey which handles less traffic than either MAE East or MAE West. These unregulated bottleneck points, according to Bell Atlantic, give WorldCom leverage over other Internet backbone providers[1]

WorldCom and MCI (1998) respond that the merger will have no effect on Network Access Points. First, MCI owns no NAPs. Second, no NAP is a bottleneck because low barriers to entry have led to a steady increase in the number of NAPs. In late 1994, there were four U.S. NAPs today there are 39 NAPs in the U.S. ISPs have a wide variety of NAPs to which they could link. Any attempt by WorldCom pre-merger, or MCI WorldCom post-merger, to take advantage of ISPs connected to any WorldCom NAP would not confer any competitive advantage. Instead, it would trigger a shift by ISPs to connect to one of multiple other NAPs and could further encourage the continuing proliferation of NAPs. In light of the ease with which an ISP can route around a NAP, the ease with which new NAPs can be and have been created, and the lack of any connection between the merger and consolidation of ownership or operation of NAPs, WorldCom and MCI argue that Bell Atlantic's NAP-related contentions do not warrant any further investigation or action.

It is clear from our research, that not all NAPs are created equal. It appears that at the major NAPs, such as MAE East and MAE West, the large Internet Backbones Providers peer with one another and smaller backbones and ISPs interconnect. The presence of the major

backbone providers in one location may confer a market advantage on the owner of the NAP. Furthermore, regulators need to address a number of questions before reaching a conclusion on the issue of market leveage. Does a single peering location occur because of network efficiency considerations, and if so, do these efficiency considerations provide the NAP owner with any pricing power? Or, since there is a relative proliferation of NAPs, is there relatively costless movement without any offsetting efficiency losses? Is the size of a NAP a source of market power arising from increased interconnection options or are there disadvantages due to increased congestion? As NAPs become congested, can the major backbone providers move to private interconnection locations that insure higher quality connectivity for themselves and lower quality connections for their competition? Again, these question could be answered by engineers within the industry.

Is There Any Evidence of Anti-Competitive or Collusive Behavior? Last Spring UUNet, a WorldCom subsidiary, instituted a new "peering" policy that canceled free interconnection for smaller Internet Backbones. In May 1997, according to Bell Atlantic, WorldCom began charging smaller ISPs and backbone networks not only for Internet transit, but simply for access to its customer routes. Backbones and ISPs who refused to pay the fees for customer routes were told that they would not be able to reach WorldCom's customers. Perhaps as many as 30 small backbones and ISPs were notified that WorldCom intended to discontinue peering at various dates in late May and early June. Additionally, in order to negotiate a new agreement, they needed to sign a five year non-disclosure agreement just to be quoted a price from UUNet (Rickard June 1997). UUNet was the subject of widespread condemnation by the communications and Internet press and the Internet community. By the end of the year relatively few ISPs had been de-peered. In many cases UUNet backed off, because of the bad publicity (Cook Report 1998). In other cases, the ISPs eventually capitulated because they had no choice. MCI, BBN, and Sprint then began charging smaller backbones too (Bell Atlantic 1998).

Some observers also detected collusion between WorldCom, Sprint, and others in announcing the end for free peering (Rickard 1997 and Cook Report 1998). Rickard stated:

> "while it appears to be UUNET, we have already amassed sufficient evidence of collusion from PSI and SPRINT to probably send someone to jail, but in any event sufficient to pull together a really interesting class action lawsuit that could potentially cripple all three companies. (Jack Rickard, June 1997,*Boardwatch Magazine)*.

There is no evidence, however, that a class action lawsuit was ever filed.

WorldCom's logic for its new peering policy was based on the recognition that its backbone network had grown bigger than most others. If the merger is approved, WorldCom will have no equals. If WorldCom enforces its current interconnection standards after the merger, even Sprint can expect WorldCom to stop freely peering with its networks. And at that point, customers would have little incentive to switch to a competing backbone provider, since all prices ultimately will be regulated by WorldCom through the prices it charges for peering.

WorldCom and MCI respond that peering should be viewed as involving payment in kind, a barter arrangement, that makes sense when the peers exchange roughly comparable amounts of traffic. Otherwise, an access fee should be paid from the smaller to larger provider, when the smaller provider wants to utilize the larger providers network or to reach a greater number of customers. The companies argue that any attempt to impose unreasonable conditions on interconnection would simply cause the affected provider to utilize alternative means to reach MCI and WorldCom's customers, which would only increase of revenues MCI and WorldCom's competitors.

Undoubtedly, speaking from recent experience, WorldCom and MCI find it hard to imagine a more certain way to destroy a company's reputation than to make it difficult for other ISPs and their customers to exchange traffic with MCI and WorldCom and its customers, or to refuse to interconnect on reasonable terms. In retrospect it appears that the attempt to do so was simply ill-advised. The company greatly damaged its reputation, as web pages, bulletin boards, and chat rooms mobilized the Internet community to oppose the heavy hand of UUNet. Sprint's involvement in the cancellations (Rickard 1997) along with allegations about the five large

peering backbones (Cook Report 1998) raise questions about tacit collusion among the large Internet Backbone Providers. Allegations about tacit collusion could be ignored in this merger review, were it not for the substantial evidence of tacit collusion in the pricing of publicly switched long distance service among AT&T, MCI, and Sprint (MacAvoy 1996), which could be easily replicated in the pricing of Internet Backbone service by WorldCom-MCI and Sprint.

Summary. There is a need to determine whether WorldCom's and MCI's control over IP addresses locks-in ISPs into depending on their upstream service. This can be accomplished by investigating whether most ISPs use Dynamic Host Configuration Other questions that need to be investigated include whether the presence of all major backbone providers confer any market advantage for a NAP; whether a single peering location occur because of network efficiency considerations provide the NAP owner with any pricing power; or whether the size of a NAP a source of competitive advantage or disadvantage due to increased congestion. Finally, the evidence on whether there has been tacit and overt collusion between WorldCom, MCI, and Sprint in signing interconnection agreements, canceling peering, or inhibiting peering needs to considered and confirmed or refuted during the review process.

The Merger and Dynamic Internet Growth and the Ease of Competitive Entry

WorldCom and MCI argue that the merger will do nothing to slow the dynamic growth of the Internet or diminish the vigorous competition among Internet service providers. There can be no doubt concerning the Internet's rapid growth and the ease of entry. In less than two years, the number of Internet Service Providers grew from 1,447 in February 1996 to 4,354 in October 1997. In the last three years the number of Network Access Points went from 4 to 39, and the number of Internet Backbone Providers has dramatically increased from a small handful to three dozen. Internet revenue has grown from an estimated $1.85 billion in annualized revenue as of April 1996, to $8.4 billion in annualized revenue as of October 1997 (Maloff Report 1997; cited by Carlton and Sider 1998). With the development of the World Wide Web the demand for

Internet connections exploded. Local telephone companies were taken by surprise as record numbers of consumers demanded second lines, so they could connect to their Internet Service Provider. New Internet products are now being readied for deployment including Internet fax, Internet voice mail, Internet telephony, and Internet interactive video. There are increasing predictions that the packet switched Internet will eventually replace the circuit switched public telephone network. WorldCom and MCI assure us that the merger cannot harm competition in the provision of Internet services.

Even some experts who express concerns about the anti-competitive motives behind MCI-Worldcom merger remain confident that the decentralized, highly competitive Internet environment is sufficiently robust to undermine any efforts of the merged company to exercise market power (Maloff 1997, Rickard 1998). However, with the rapid growth in Internet products, customers, and traffic there has to be sufficient bandwidth availability to provide wholesale services and backbone connectivity. Otherwise, the Internet will experience congestion, which creates the opportunity for mischief and market failure.

MCI and WorldCom assure us that there are no significant barriers to capacity expansion by either incumbent network providers or new firms building networks. They report that new national, high capacity fiber optic networks are currently being deployed and new entrants have recently announced plans for more network deployments. They predict that within two years there will be seven national fiber optic networks with abundant capacity to support Internet growth and development. Only four, however, currently exist, which will become three if the merger is approved- AT&T, MCI-WorldCom, and Sprint; two are currently under construction by Qwest and IXC; and two have been announced by Level 3 and Williams. Other announcements have since followed by GTE and Frontier. The merger, however, will eliminate the nation's fourth largest fiber optic network, WorldCom and merge it into MCI's, which is the nation's second largest network.

MCI and WorldCom believe that only possible source of a competitive issue presented by the MCI-WorldCom merger arises from the transmission facilities that will be controlled by

the merged company that provide Internet service (1998).[2] That is because after the merger, except for Sprint's facilities, all other backbones will either be owned by WorldCom-MCI or will operate on facilities leased from WorldCom-MCI (Rickard 1998). WorldCom is currently the leading supplier of telecommunication network facilities for lease to the Internet. By allowing it to merge with MCI, one of two other Internet national network suppliers, Sprint will become the only national network alternative to WorldCom-MCI. The other likely candidate, AT&T, has not participated in the Internet wholesale market. When it launched AT&T World Partners, for example, it relied on BBN to provide its backbone services; AT&T has participated only at the retail level of the Internet market.

To alleviate any concern about a merged WorldCom-MCI's control over transmission facilities WorldCom, MCI, and their experts, Carlton and Sider, focus on the expansion plans of the other potential network providers. The current telecommunications interexchange market is highly concentrated. The top 4 companies owned 97% of the total communications plant at the end of 1996 (Table 6). WorldCom is the only national network provider operating outside the framework of the big three, AT&T, MCI, and Sprint. Since WorldCom is not a brand name long distance provider, it leases most of it facilities, and much of those leased facilities carry Internet traffic. The new competitors will also lease their facilities. WorldCom and MCI are convinced the new entrants will supply them with effective competition. However, competitors, such as IXC and Qwest, accounted for only 3 percent of the total communications plant and less than 5 percent of the total fiber route miles in 1996. IXC owned less than one-half of one percent of the total interexchange carrier plant in 1996.

Table 6: Total Communication Plant Owned by Interexchange Carriers Reporting to the FCC at end of 1996		
1996 Source: FCC	Billions of Dollars Total Communications Plant	Proportion of Plant Owned by Interexchange Carrier
AT&T	$32.94	58.94%
MCI	$14.62	26.16%
Sprint	$4.11	7.35%
WorldCom	$2.39	4.28%
Frontier	**$0.44**	**0.79%**
IXC	**$0.27**	**0.48%**
All Others	**$1.12**	**2.00%**
Total	$55.89	
FCC: Statistics of Communications Common Carriers 1997 Table 2-1		

The removal of the independent WorldCom may represent the most serious threat to the competitive provision of telecommunications bandwidth and capacity to the Internet. WorldCom owns the fourth largest fiber optic network, which was at the end of 1996 larger than all other smaller networks combined. Without vigorous competition from AT&T, GTE, and the Regional Bells the merger may create the conditions that foster tacit or overt collusion between WorldCom and Sprint in providing Internet Backbone services and transmission facilities under long term contracts.

The Internet service market is characterized by change, rapid growth, and ease of entry. However, some core antitrust questions arise at under girding network levels of the Internet market place. Does it make any sense to allow two of only four integrated interexchange carriers to merge, particularly, when the four account for 97 percent of the telecommunications network facilities? Does it make any sense to allow a merger between two of the three largest providers of Internet transmission facilities? Will the merger of WorldCom and MCI create a duopoly in

the provision of national network services to Internet? Will the merger create conditions that allow the new company to dominate the Internet and exercise market power individually or in concert with Sprint? Or, will the new entrants that are currently deploying national fiber optic networks provide ample competition to keep competitive pressure on the two major providers? The answers to these questions and the federal and state governments responses to the answers may determine the future vitality of the Internet.

What are the Questions that Must Be Answered in Order to Decide Whether a Merged WorldCom-MCI Will Dominant the Internet?

What is the market structure of the Internet? WorldCom and MCI vigorously deny that there is a separate Internet Backbone market.[3] Most independent observers and WorldCom-MCI critics believe there is a separate Internet Backbone Provider market and that merger may create a company that will dominate that the Internet backbone market. The determination of the Internet's market structure may ultimately determine the outcome of the review process.

What is the appropriate measure of Internet market share and market concentration? Every independent market share estimate indicates that a WorldCom and MCI merger will create a highly concentrated Internet backbone market structure and is "likely to create or enhance market power or facilitate its exercise." Further analysis is warranted. The Justice Department and the FCC need to force WorldCom and MCI to fully disclose their Internet revenues, their interconnection backbone agreements, their peering agreements, their contracts with Internet Service Providers, their contracts with dedicated access customers, their administrative procedures and agreements at their Network Access Points, and their Private line, facility, and service agreement to provide telecommunications services to Internet Service Providers and Internet Backbone Providers. In addition, the FCC and the Justice Department should call upon the Internet engineering community to resolve disputes over traffic flow, traffic volume, ISP

connections, and overall traffic patterns and what proportion the merged company would control. Possibly, Merit or some other NSF funded research center could provide these answers.

Does WorldCom's and MCI's control over IP addresses lock-in ISPs and create the conditions for the exercise of market power? This question can be answered by investigating whether most ISPs and dedicated access customers use Dynamic Host Configuration Protocol and if not how costly would it be for them to install it or a similar product. Again, this issue could be resolved with the assistance of engineers who are expert in IP address configuration and the associated costs in changing IP addresses.

Does the ownership of the two largest NAPs MAE East and MAE West, where other major backbone providers interconnect, confer any market power on WorldCom-MCI? Furthermore, does a single peering location occur because of network efficiency considerations, and if so, do these efficiency considerations provider the NAP with any pricing power? Or, since there is a relative proliferation of NAPs, is there relatively costless movement without any offsetting efficiency losses? Is the size of a NAP a source of market power arising from increased interconnection options or are there disadvantages due to increased congestion? Again, these question could be answered by engineers within the industry. Additionally, how different are the transit contracts are negotiated at the respective NAPs. Are they basically standard agreements or do they vary depending on the size and quality of the NAP? Since this information is not public available, hearings and investigations must force the disclosure of this information.

Has there been any overt or tacit collusion between WorldCom, MCI, and Sprint in signing interconnection agreements, canceling peering, or inhibiting peering? For those who believe they know that there is tacit collusion among the major Internet Backbone Providers,

particularly, WorldCom, MCI, and Sprint; they should introduce their evidence into the FCC review process.

Will the merger of WorldCom and MCI create a duopoly in the provision of national network services to Internet? The core antitrust questions arise at the network levels of the Internet market place. Does it make any sense to allow two of only four integrated interexchange carriers to merge, particularly, when the four account for 97 percent of the telecommunications network facilities? Does it make any sense to allow a merger between two of the three largest providers of Internet transmission facilities? Will the merger of WorldCom and MCI create a duopoly in the provision of national network services to Internet? Will the merger create conditions that allow the new company to dominate the Internet and exercise market power individually or in concert with Sprint? Or, will the new entrants that are currently deploying national fiber optic networks provide ample competition to keep competitive pressure on the two major providers?

Conclusion

The Internet is too important to our national information infrastructure to chance that any one company dominating its future development. Before allowing the merger to proceed the Justice Department and the FCC must decide whether the merger is likely to create or enhance market power or facilitate its exercise. To make that decision, they must advance our knowledge of the economic structure of the Internet, which is totally inadequate. The secretive commercial culture of the Internet is ripe for the exercise of market power and prevents any public scrutiny of commercial practices. Only the government's subpoena power can apparently break through the culture of secrecy surrounding Internet's economic structure.

This study reviewed the public available evidence and used it to focus the questions concerning the issues in the merger case. Although these questions cannot be answered with precision, there is a prima facie case that the merger will severely threaten competition in the

Internet market. GTE's motion (2/5/98) deserves support. The FCC should require WorldCom and MCI to provide sufficient data to address competitive effects of the merger on the Internet market. Neither WorldCom nor MCI have provided sufficient data to demonstrate that the Internet backbone market should not be examined separately from the Internet access market. GTE rightly requests the WorldCom and MCI provide traffic data for their networks; revenue data from the various parts of the Internet market in which they participate; a list of the major competitors in the Internet backbone market and their relative market shares; any internal analyses differentiating between Internet backbone and Internet access providers; customer counts; and business plans with regard to: network upgrades and expansion; NAP upgrades and expansion; and peering, access, and interconnection agreements. After an appropriate period for public review of the new material, the Commission should then structure a new pleading cycle to ensure informed public comment.

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[1] Increasingly traffic is exchanged by the large backbone providers at private peering points. This may also have implications for market leverage

[2] We, however, believe this is a secondary issue. The primary concern about the merger arises from the interconnection agreements.

[3] Ironically, WorldCom and MCI argue that they are just Internet Service Providers; one among thousands peers. This is ironic because last summer WorldCom's subsidiary UUNet lead the charge to end peering on the Internet.

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Bad Deal Of the Century

The Worrisome Implications of the WorldCom-MCI Merger

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EXECUTIVE SUMMARY

The proposed $37 billion merger of WorldCom Inc. and MCI Communications Corp. would constitute the largest acquisition in business history. If allowed to proceed by regulators, it would combine the nation's two largest Internet "backbone" systems and two of America's top four long-distance companies.

The proposed merger raises serious antitrust and competitive issues that affect every U.S. consumer and business. The combined company will control 50% or more of the Internet infrastructure and one-quarter of the U.S. long-distance telephone market, raising concerns that approval of the merger will thwart the pro-competitive intent of Congress in passing the Telecommunications Act of 1996.

The combined WorldCom-MCI will control 50% or more of the Internet infrastructure and one-quarter of the U.S. long-distance telephone market.

WorldCom's bid to dominate the telecommunications industry rests on three strategic initiatives: privileged access to capital markets, a rapid increase in market power based on expanded control over the Internet backbone, and preferential service for high-volume business and well-off subscribers and neglect of the broader consumer market.

The key concerns raised by this report are the following:

- **The proposed merger is an attempt by WorldCom to develop market power over the Internet.** The merger would enable the combined company to dominate the Internet backbone and major network access points of the Internet, giving the company substantial power over the terms and pricing of Internet interconnection. This concentration of power would undermine the Telecommunications Act of 1996, which explicitly intended to promote competition in this critical sector. Indeed, some Internet service providers have already begun to protest that they will face additional levies as a result of the merger.

- **Marketing to high-volume users subverts the intent of the Telecommunications Act of 1996, which codified the objective of universal service for the first time in the nation's history.** WorldCom has gained its current market position through its dedicated pursuit of favored customer groups and an equally deliberate neglect of other subscriber market segments. A WorldCom takeover of MCI will only intensify this focus on business customers and on an elite stratum of high-volume individual users. By integrating the joint company's exclusionary local networks with its long-distance facilities and, specifically, with its tiered Internet services, the merger threatens to establish a freestanding infrastructure that is

largely separate from the inclusive public-switched network and that cherry-picks in favor of high-volume users.

- **The combined company's financial health is uncertain.** WorldCom's ability to wage battle for MCI rested upon its uniquely inflated share price and its established practice of financing acquisitions by using its strong stock as its chief currency. Since it was incorporated in 1972, the company that became WorldCom in 1995 used its common stock to acquire a succession of 20-odd local, long-distance, and Internet companies. Its $36.5 billion takeover offer valued MCI at nearly double the price the carrier had commanded just months before. A combined MCI-WorldCom faces worrisome financial issues, including an appreciably increased debt burden and the likelihood that an MCI under WorldCom management will not generate profits sufficient to justify the high price paid.

The changes from the merger would harm the nation's telecommunications system at exactly the moment when its health is most important to the overall well-being of the economy.

- **Consolidation of the two companies could impose serious social costs.** As noted above, the merger may reduce the resources available to modernize the publicly shared telecommunications network. In addition, an increase in market dominance by these two non-union carriers will affect labor relations practices in the industry and will exacerbate the push for lower wages.

MCI-WorldCom is a mistake waiting to happen. The combined company's financial health would be uncertain. Its prospective dominance over the Internet would crowd out rival vendors and imperil interconnection on nondiscriminatory terms. The premium services that it would target at high-volume business and elite residential users would come at the expense of other residential customers. Together, these changes would harm the nation's telecommunications system at exactly the moment when the health of that infrastructure is most important to the overall well-being of the economy. Regulators must address these concerns now, before a combined MCI-WorldCom consolidates its market dominance into an effective monopoly position.

INTRODUCTION

When AT&T rose to monopoly power early in the 20th century, it relied on a three-prong strategy: it used its privileged access to capital markets to acquire a number of would-be competitors; it exerted leverage over rivals it had not acquired by increasing its stranglehold on crucial communications technology; and it targeted high-volume users with preferential service offerings.

This scenario, carried out decades ago before effective, pro-competitive regulation protected the integrity of markets for consumers, may sound familiar. It applies equally well to WorldCom's bid to acquire MCI Communications Corp.

The proposed WorldCom-MCI merger raises serious issues that affect every U.S. consumer and business.

The proposed $37 billion WorldCom-MCI merger would be the largest acquisition in business history. If approved, it will create a telecommunications behemoth with revenues of $32 billion, a market capitalization of $60 billion, 63,000 employees, and one-quarter of the U.S. long-distance telephone market. The company will also control 50% or more of the Internet backbone, a system of high-capacity circuits and related facilities that are essential to carrying traffic across the global Internet.

The proposed WorldCom-MCI merger raises serious issues that affect every U.S. consumer and business. There are concerns that it violates antitrust laws, which are formulated to assure that no single company gains sufficient power to dominate a market. There are also concerns that it does not protect the public's interest and violates the pro-competitive intent of Congress in passing the Telecommunications Act of 1996.

Thus, the proposed WorldCom-MCI merger raises an important question: as the 21st century dawns, can the United States afford to risk the creation of a new telecommunications monopoly?

As this study shows, the answer is no.

The intertwined acquisitions and strategies involved in WorldCom's offer for MCI constitute an unlawful bid for market domination. WorldCom's proposed acquisition is overtly anti-competitive, and it calls for federal regulators to protect consumers and competitive markets by rejecting the merger.

THE DEAL AS FINANCE

In 1894, Bell's patents on the telephone entered the public domain. Literally thousands of independent service suppliers soon flooded the industry, putting an end to the Bell System's monopoly over telephone system development. AT&T attempted to reclaim its supremacy by rapidly expanding its network, and it raised the funds it needed by turning to outside sources of capital. Bond sales and, above all, issues of common stock pumped hundreds of millions of dollars into the company, and it was able to buy out leading local and toll network competitors as well as build up its ownership holdings. The company's total long-term debt ballooned from $10 million in 1899 to $211 million in 1908, and its authorized capital stock increased fivefold between 1900 and 1910, to $500 million.[1]

In the bidding war for MCI, as well as throughout WorldCom's corporate history, finance has played an unusually important and profoundly problematic role.

WorldCom's industry consolidation strategy has been no less reliant on finance. Sitting on stage alongside WorldCom executives at the Manhattan news conference announcing WorldCom's plan to acquire rival MCI was Thomas King, the Salomon Brothers banker most directly involved in the bid. Bankers rarely assume such visibility in the deals they help to arrange. In this case, however, such an elevated status was fitting: in the bidding war for MCI, as well as throughout WorldCom's corporate history, finance has played an unusually important — and profoundly problematic — role.

Incorporated in 1972, the company that became WorldCom in 1995 used its common stock to acquire a succession of 20-odd local, long-distance, and Internet companies. By mid-1997, WorldCom had suddenly emerged as a power in U.S. telecommunications.[2] About its next prospective takeover — that of MCI — Standard & Poor's declared that WorldCom was "primed to become the next telecommunications giant."[3]

The events that led to WorldCom's bid for MCI began in 1994. In that year, British Telecom acquired a minority ownership stake (20%) in MCI. The action marked a strategic shift toward transnational telecommunications system partnerships between leading U.S. long-distance companies and their overseas correspondents. It was soon followed by similar initiatives on the part of AT&T and Sprint. In November 1996, however, British Telecom raised the ante by offering $24 billion (including assumption of some $5 billion of MCI's debt) for the 80% of MCI that it did not already own. The U.S. Justice Department, the European Union, and the Federal Communications Commission (FCC) gave their assent to this prospective takeover. MCI reported in July 1997, however, that its ongoing attempts to expand into local telephone service in the U.S. were producing unexpectedly large losses, projected to reach approximately $800 million in 1997 alone.[4] Disturbed by

this development, major BT shareholders insisted that the deal be restructured.[5] In late August 1997, the merger's value was decreased by 22% to $19 billion; the proportion of the combined company to be owned by MCI investors was also significantly reduced, from 34% to 25%.[6]

The merger's sudden repricing shocked and angered the institutional investors that collectively held nearly half of MCI's stock.[7] "I don't know of any arbitrage firm that didn't have a big position in this deal," declared one anonymous investor.[8] Leading mutual fund managers also had jumped into the deal headfirst, making big bets that it would go through as initially projected. When the BT-MCI merger was renegotiated, these speculators' bids on the stock unraveled. Among the investors hit by the restructuring were the Soros Funds Management, Fidelity Investments (that held 43 million shares, amounting to 7.8%, of MCI stock), Lord, Abbett & Co. (4 million shares), and the large investment bank Salomon Brothers — which alone lost a reputed $100 million.[9]

WorldCom's takeover offer valued MCI at nearly double the price the U.S. carrier had commanded just months before.

In a story about the events that followed, the *Wall Street Journal* reported that "deal-makers flush with junk bonds" and other risky financial instruments were "storming that staid phone industry, where some of the biggest mergers in history have been hatched, prodded by investment bankers seeking to top one another's deals and fees."[10] There is no available evidence that any particular intermediary induced WorldCom to make an offer for MCI. Indisputably, however, MCI was "put in play" when, after prominent British investors continued to express anxieties about the renegotiated deal, MCI and British Telecom relaxed their merger agreement on October 16, 1997.[11] And it is equally certain that the financial terms of WorldCom's bid for MCI were laden with considerable downside risks.

WorldCom and GTE each made unsolicited attempts to acquire MCI, and their ensuing rivalry generated what one journalist called a "feeding frenzy...for investment bankers and lawyers." So many firms came to be involved as advisors and financiers that, at the high point of the action, "many of the industry's best analysts can no longer speak publicly about the deal because their firms are working on it."[12] Hoping to reap advising fees — valued at a minimum of $30 million — Salomon leapt in to assist in WorldCom's offer. "The only company with as much to gain from WorldCom's...bid for MCI apart from WorldCom itself may be Salomon Brothers," wrote the *New York Times*.[13]

WorldCom's (eventual) $36.5 billion takeover offer — which valued MCI at nearly double the price the U.S. carrier had commanded just months before — enlarged qualitatively upon WorldCom's established practice of financing acquisitions by using its strong stock as its chief currency. WorldCom's bid for MCI thus

was widely seen as a function of extraordinary stock market conditions. A Paine Webber analyst declared that "WorldCom would never have been able to pull off a deal like MCI if it weren't for the bull markets we've had."[14] A commentator in the *Financial Times* agreed, asserting that the battle for MCI "is about how the massive liquidity in the U.S. equity and debt markets is being used to float corporate takeovers that would have seemed unimaginable even in the go-go 1980s."[15] These claims are certainly valid. But, above and beyond the general conditions of the market, WorldCom's ability to wage battle for MCI rested upon its *uniquely* inflated share price.

If the deal closes as projected, MCI-WorldCom will face worrisome financial issues.

WorldCom boasts that it has provided investors with 55.8% annual return over the last eight years — orders of magnitude above the returns of other carriers (4.3% for MCI, 9.4% for BT, and 8.8% for GTE).[16] WorldCom's stock price accordingly multiplied to the point that, during 1997, the company had a price-earnings ratio double that of rival long-distance companies.[17] Institutional investors, which control over three-fifths of WorldCom's stock (as compared with just 38% of AT&T's today), have profited hugely from these holdings.[18] WorldCom's high-flying stock attested to the extraordinary love affair between the company and major investment analysts. The *New York Times* declared, for example, that "[t]he job of persuading Wall Street that WorldCom is up to the task of buying MCI will fall to Jack B. Grubman" — the same senior analyst who had earlier advised his clients to buy MCI, in hopes of profiting from British Telecom's bid.[19] Wall Street's goodwill, however, testified not to WorldCom's stellar record of building a qualitatively enhanced telecommunications infrastructure but to a risky attempt at industry consolidation that threatens the overall course of U.S. telecommunications development.

WorldCom's stock-denominated offer was — and is — fraught with uncertainty. What if, for example, WorldCom's stock price were to decrease suddenly before its takeover offer closed? The offer employs a device called a "collar": if WorldCom's shares continue to trade between $29 and $41, then the terms of its bid are guaranteed. If its share price trades below $29, however, MCI shareholders will have to be given additional WorldCom stock. Shareholder approval might, or might not, be forthcoming at this altered stock price. On November 12, 1997, WorldCom's stock price did tip nominally below $29 a share.[20]

If the deal closes as projected, on the other hand, MCI-WorldCom will face worrisome financial issues. MCI's capital investment totaled around $3.9 billion during 1997, up from $3.3 billion in 1996 and $2.9 billion in both 1995 and 1994.[21] Under its new debt burden, would the combined firm be able to continue investing at this earlier level?

WorldCom claims that the deal will result in cost savings of some $20 billion over five years, enough to underwrite a 20% earnings increase during its first full year of merged operations.[22] But the company will have to pay an estimated $1.1 billion in annual pretax interest, on an appreciably increased debt burden.[23] If for any reason the combined company's stock price falls substantially, then the institutional investors who have been at this deal's center stage from the outset will not be slow to demand that measures be taken to improve MCI-WorldCom's bottom-line performance. WorldCom's singular dependence on Wall Street's goodwill increases the risk that such cost cutting will move into the terrain of productive capital investment and employment.[24]

If the combined company's stock price falls substantially, then the institutional investors who have been at this deal's center stage will not be slow to demand that measures be taken to improve bottom-line performance.

Thus, this caution by a writer for the *Financial Times*, a publication that is hardly given to questioning the propriety of the unfettered free market:

> What happens if the financial projections on which such gigantic financial structures are founded prove over-optimistic, and...Mr Ebbers is unable to make a merger with MCI work?
>
> There is little room for error. Based on the high value placed on WorldCom's stock, Wall Street expects a combined WorldCom/MCI to enjoy a premium rating on the stock market that will set it apart from every other large telecom company. Any suggestion that his company was gravitating to the merely ordinary would be devastating.[25]

Is an MCI under WorldCom management capable of generating profits sufficient to justify paying nearly double the price it could garner in August 1997? MCI's single largest shareholder, British Telecom (holding 20% of MCI's outstanding stock) insisted on summarily cashing out its share holdings for $7 billion in cash. Does the United States wish to attach its information economy's most critical emergent infrastructure — the telecommunications system — to such uncertain financial moorings? The industry consolidation strategy on which the deal is predicated gives further reason for skepticism.

THE DEAL AS SYSTEM DEVELOPMENT: THE INTERNET AND THE TELECOMMUNICATIONS INFRASTRUCTURE

During the first 15 years of the 20th century, AT&T attempted to use its growing control over the technology of long-distance transmission to build a nationwide monopoly.[26] Today, as the telecommunications infrastructure undergoes what is arguably its most significant transformation since that time, WorldCom is following in AT&T's footsteps — through its attempt to develop market power over the Internet. WorldCom's bid for market dominance thus must be placed within the context of institutional and technical change that has engulfed telecommunication as the Internet's role has grown.

WorldCom is following in AT&T's footsteps — through its attempt to develop market power over the Internet.

Although the shift toward data as opposed to voice carriage commenced many years ago, it has rapidly accelerated during recent years, owing principally to the growth of the Internet. Indeed, for the fourth quarter of 1997, MCI reported that half of its revenue growth came from Internet and data services. The latter in turn already accounted for more than $3 billion of its $5.11 billion in total quarterly revenues.[27]

The Internet is an astonishingly versatile system, capable of supporting an increasingly diverse range of communication modes. For example, the world's estimated 70 million fax machines have traditionally passed images to one another over the public-switched telephone network.[28] Today, however, fax-over-Internet (IP) service appears on the verge of usurping this market segment. WorldCom's Internet subsidiary, UUNet (acquired in 1996), deploys its global Internet backbone network to support a high-security fax service — priced at about half the rate of phone-based faxes. WorldCom Chief Operating Officer John Sidgmore predicts that the first commercially significant business telecommunications service to cross over to the Internet will be faxing. The significance of this change may be gauged when we learn that faxes presently constitute half of international phone call volume.[29]

The core market around which the public switched network is built — voice service — also is not immune to a similar service migration. Though the quality of "voice over IP" services has historically been poor, it has improved, rendering the Internet an increasingly effective rival to conventional forms of voice carriage. The threat of Internet telephony stems, most immediately, from the business users who account for a disproportionate share of overall telecommunications demand — and who, primarily to realize cost savings, have moved rapidly to add IP telephony to their existing internal data networks.[30] Trying to reclaim market leadership, established carriers like AT&T have declared that they will furnish Internet

telephone services at prices well below established long-distance rates.[31] Thus, Internet telephony is poised to assume an increasing share of public telephone traffic. How much and how fast remains unclear.

A raft of additional services — from well-established e-mail to still-emerging Web video, and from inter-corporate electronic commerce to consumer transactions on the Web — are also changing the Internet's impact on the established telecommunications industry. The Internet is increasingly seen as constituting the basic infrastructure for messages originating in any mode or genre.

This transition, however, involves significant structural change in the technology and policy of telecommunications. The Internet overlaps the physical infrastructure of the telecommunications system, but it simultaneously alters the latter's mode of operation. As established transmission facilities are enhanced with specialized routers and other instrumentation, a suite of protocols known as TCP/IP is used to transform the underlying network's functionality. The technology used by the established telecommunications system is "circuit switching," whereby a switch allocates and holds open a specific pathway, or circuit, for the duration of any given call. The structural technology of the Internet — "packet switching" — is different. Using TCP/IP, messages are chopped up into packets, each of which is addressed and routed individually across the network, before being reassembled in the correct sequence at the ultimate destination. The great economic advantage of packet switching is that, by permitting more extensive sharing of network resources, it affords greater cost efficiency. "Packet-switched networks," declared then-FCC Chairman Reed Hundt, "will soon carry most of the country's bits, and that will change the economics, the structure, and just about everything else about the telecommunications industry."[32]

Internet telephony is poised to assume an increasing share of public telephone traffic.

Yet perhaps Hundt has overdrawn the extent of the collision between the Internet and the conventional telecommunications system. Substantial rearrangement and augmentation of the Internet's packet-switched architecture will be needed before the full range of services afforded by established circuit-switched networks can be effectively integrated. In the meantime, carriers can try to get ahead of the process by assimilating key elements of Internet technology into their existing networks. For the foreseeable future, the ability to control and deploy both packet-switched data networks and circuit-switched voice networks will remain critical. The carriers' attempt is to mesh the rival technologies in order to retain the ability to provide a comprehensive array of service offerings to leading customers.[33] "If you don't control network assets from voice to Internet in the future, you don't have a prayer of being a significant global player," sums up one industry analyst.[34]

Beyond this, it is difficult to see. No consensus has emerged on economic